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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re patent application of: Docket No.: YO9-98-446

Michelle Y. Kim, et al.

Serial No.: 09/200,985 Group Art Unit: 2176

Filed: November 30, 1998 Examiner: Maikhanh Ngyen

For: **PROGRESSIVE ADAPTIVE TIME STAMP RESOLUTION IN MULTIMEDIA AUTHORING**

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF OF APPELLANTS UNDER 37 C.F.R. §1.192 (c)

Sir:

Appellants have filed a timely Notice of Appeal from the final office action, mailed October 27, 2003, of the Primary Examiner in finally rejecting claims 1, 2 and 5-7 in this application. This appeal brief is being filed in triplicate pursuant to 37 C.F.R. §1.192(a).

Please charge International Business Machine Corporation's Account No. 50-0510 in the amount of $330.00 (37 C.F.R. §1.17(f)) to cover the fee for filing this appeal brief. Appellants believe that no extensions of time are required at this time. However, if additional extensions of time are necessary to prevent abandonment of this application,

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then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor (including any additional fees for filing of the Appeal Brief) are hereby authorized to be charged, or overpayment credited, to IBM Deposit Account 50-0510.

REAL PARTY IN INTEREST

The real party in interest in this appeal is International Business Machine Corporation, assignee of the entire interest in the above-identified application.

RELATED APPEALS AND INTERFERENCES

The Appellants, their legal representatives and the Assignee are not currently aware of any appeal that may directly affect or be indirectly affected by or have some bearing on the Board's decision in this appeal.

STATUS OF THE CLAIMS

Claims 1-7 are currently pending.

Claims 3 and 4 are allowed.

Claims 1, 2 and 5-7 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent No.5,659,790 issued to Kim *et al.* ("Kim") in view of U.S. Patent No. 6,397,251 issued to Graf ("Graf") and further in view of U.S. Patent No. 5,682,384 issued to Zarros ("Zarros").

The rejections of claims 1, 2 and 5-7 under §103(a) are now the subject of the present appeal. The claims in issue and status of all claims are attached in Appendix "A".

STATUS OF AMENDMENTS

All prior amendments to the application have been entered.

SUMMARY OF THE INVENTION

The invention provides for a method of composing and playing multimedia presentations (pg 1, lines 11-13). In the invention, the method determines the factual durations of multimedia objects (e.g., video, audio, animation, etc) at runtime. This permits playback of the multimedia objects by alleviating data delivery problems such as those typically due to network congestion or transmission errors (pg 1, lines 11-13 and pg 3, lines 18-19). That is, the method alleviates problems of unreliable delivery of the objects in multimedia presentations (pg 3, lines 20-22).

The invention provides a progressive time stamp resolution method that includes providing a player of a multimedia presentation with information that includes two labels. One label is for a multimedia object's start time and one label is for the multimedia stop end time relative to other multimedia object start and stop times (pg 7, lines 1-12). This information indicates how the various multimedia objects are temporally related (pg 7, lines 12-15) to one another. The information also includes three durations: a minimum duration, a maximum duration and a preferred duration (pg 7, lines 2-21, pg 10, lines 9-12, and Fig. 2). By using this information, the duration of the multimedia objects is

resolved using the information based on actual multimedia object durations and actual delayed arrival time of information of the multimedia objects to be played (at least pg 7, line 22 to pg 10, line 8). The actual delayed arrival time is an absolute difference between a known duration and the preferred duration (e.g., ideal duration as established by the author) of the multimedia objects (pg 10, lines 17-22, pgs 10-14, Figs. 3-6).

Thus, the flexible timing information can be used by the client to adapt the timing of the ongoing presentation to the environment. This will allow the multimedia objects to have more room to remain within an author's intent and expectations of how the presentation should be played (pg 4, lines 1-4). Also, by using the method of the invention, the resolution of the actual label time can be made progressive over time as more information becomes available in the form of factual multimedia objects durations, and arrival of information objects that are to be played in the near future (pg 10, lines 17-22). In this manner, the method can calculate arrival times in an expedient manner and compensate for any delays in transmission.

ISSUES

Whether the subject matter of claims 1, 2 and 5-7 is obvious in view of the level of ordinary skill in the art under 35 U.S.C. §103(a) as evidenced by U.S. Patent No. 5,659,790 issued to Kim *et al.* ("Kim") in view of U.S. Patent No. 6,397,251 issued to Graf ("Graf") and further in view of U.S. Patent No. 5,682,384 issued to Zarros ("Zarros").

GROUPING OF CLAIMS

The rejected claims stand or fall together.

ARGUMENT

The invention provides many meritorious advantages over the prior art systems. For example, the invention provides flexible time stamping of objects. This permits flexible adaptation to delivery problems typically due to network congestion or transmission errors. This flexible timing provides duration of an object to be specified as a range and the start and end times are made relative to other multimedia object start and end times. This information may be used by a client player to adapt the timing of an ongoing presentation, involving the interconnected multimedia objects, to the environment (e.g., transmission and network issues), while still remaining within the author's intent and expectations for the presentation. This provides great advantages over known systems, which cannot adapt readily to the environment and hence compensate, progressively, for jitter and timing problems.

For example, at page 7, of the specification, an illustration shows the use of labels and temporal relationships between multimedia objects. This provides the advantage of being able to resolve the duration of the multimedia objects using the information based on actual multimedia object durations and actual delayed arrival time of information of the multimedia objects to be played. This will permit the multimedia objects to act in accordance with an author's intent and expectations, compensate for any delays in transmission and provide a jitter free presentation. .

Specifically:

> "consider a presentation that is authored having three multimedia objects, a video clip (V), an audio clip (A), and a background image (B). .... [T]the Isis authoring system requires the author to specify for each multimedia object the duration range, as well as a relative start and end time. For the three objects in our exemplary presentation, the parameters are authored as:

	start	end	minimum duration	preferred duration	maximum duration
V	P1	P2	3 seconds	4 seconds	5 seconds
A	P2	P3	3 seconds	4 seconds	4 seconds
B	P1	P3	7 seconds	7 seconds	8 seconds

> The labels P1, P2, and P3 are to indicate how the various multimedia objects are [temporally] related. This means, for example, that objects V and B start at the same time. The temporal aspect of this authored presentation can be depicted more clearly in Figure 2."

Now, using the labels of the invention, an example at page 10, shows the use of the labels and resolution of the multimedia objects as progressive over time. By using the labels and temporal relationships , the absolute time of a certain label will become known when playback has finished for a particular multimedia object. And, very advantageously, as more information becomes available in the form of factual multimedia object durations, and arrival of information of objects that are to be played in the (near) future, the system can use this information in a progressive manner to ensure proper playback regardless of any transmission problems.

By way of an illustrative example,

> "A client (i.e., a player of the multimedia presentation) must receive for each multimedia object five items of information. These items are the two labels, one for the object's start time and one for the end time, and the three durations, the minimum, maximum, and the preferred duration. In the case of video, audio, and other multimedia objects that have a playback speed, the preferred duration must correspond to the "regular" playback speed of the object. The information on a particular multimedia object must be delivered to the client prior to starting playback of the object.
>
> When playback has finished for a particular multimedia object, the absolute time of a certain label will become known. This means, that one or more label times can be resolved using this new information. The time stamp resolution is therefore progressive over time, as more information becomes available in the form of factual multimedia object durations, and arrival of information of objects that are to be played in the (near) future.
>
> To resolve the actual label time, and the corresponding duration of the multimedia objects that have that label for their respective end times, the following steps are taken:
>
> 1. Collect all the dependency relations for the label Px, by taking all objects n that have Px as the label for their end time..."

Thus, by using the information provided by the method of the invention, playback of the multimedia objects can be efficiently provided by alleviating data delivery problems such as those typically due to network congestion or transmission errors. This will also allow the multimedia objects to have more room to remain within an author's intent and expectations of how the presentation should be played. Additionally, these examples clearly show that labels are provided and used by the invention to temporally correlate objects during playback and once an object playback has finished (i.e., actually

played) the absolute time will become known and that one or more label times can be resolved over time.

Independent Claim 1

These same features are not provided by the references, as combined by the Examiner, In particular, in rejecting claim 1, the Examiner asserted that the Kim reference shows all of the features of independent claim 1 except for resolving the durations of multimedia objects using the information based on actual multimedia object durations and actual delay arrival time of information of the multimedia objects to be played. However, the Examiner was of the opinion that Graf shows this feature missing. The Examiner admitted, though, that the combination of Kim and Graf do not explicitly teach resolving durations of multimedia objects using the information based on actual multimedia objects durations and delay arrival time of information of multimedia objects to be played. But, the Examiner was of the opinion that Zarros teaches these features, and it would have been obvious to combine Graf and Zarros with Kim to achieve the claimed invention.

Appellants agree that Kim and Graf do not show the claimed features as noted by the Examiner. But Appellants further submit that additional features of the claimed invention are also not contemplated by Kim, Graf and Zarros. Appellants also disagree that Graf shows using the information based on actual multimedia object durations; instead, Graf shows the use of preferred object durations, not actual durations. Actual

duration includes the result from any real delays in transmission and processing before and during playing by the player.

Further, Appellants disagree that Zarros teaches or suggests resolving the durations of multimedia objects using the information based on actual multimedia durations and actual delayed arrival time of information of multimedia objects to be played. Zarros, in contrast, shows compensating for network jitter in arrival times of packets based on an estimated reference time (col. 5, 53-56). An estimated arrival time is clearly not an actual time, as calculated and used by the claimed invention. In fact, using an estimated delay time will not provide the greater accuracy as can be ahived by the presently claimed invention.

Kim generally relates to composing and playing multimedia documents with variable play time on a computer system and, more particularly, to composing and playing multimedia episodes in multimedia documents so that they are presented correctly in time when the document play time is varied. At column 4, Kim describes composing a "multimedia story" by a user manually selecting among a list of episodes (e.g. video, text, and audio (lines 9-10)), each associated with a triplet of lengths (i.e., minimum, maximum, and optimum lengths). Once these durations are manually set by the user using a user interactive screen shown in Fig. 2, the episodes are then scheduled together (col. 4, line 66 to col. 5, line 1).

However, Kim does not teach the receiving of these episodes and resolving the durations based on actual multimedia object durations and delayed arrival times, the main problem being address by the invention. Instead, Kim teaches creating objects from a list

and assigning a minimum, maximum and an optimum length of each object to provide temporal definitions relative to each object. However, there is no teaching, whatsoever, on receiving these objects (e.g., after a transmission) and resolving relationships between objects using actual multimedia object durations and delayed arrival times.

Also, on page 3 of the Office Action, dated October 27, 2003, the Examiner cites col. 6, lines 3-12 and col. 6, lines 54-63, respectively, as evidence that Kim shows information comprising two labels, one for a multimedia object's start time and one for the multimedia object's end time relative to the other multimedia object start and end times. Appellants respectfully submit that his is incorrect. Review of these sections clearly shows that there is no teaching whatsoever of information supplied to a player that includes two labels, one for start time and one for end time as recited by the invention. Rather, this section simply shows a flowchart/process of Fig 6 which has a starting step at step 601 (line 11) and an ending step (line 63), respectively. That is, Kim simply shows that a process "starts" for creating a multimedia story and shows that the process "ends". This does not show two labels; namely,

(i) a label for a multimedia object's start time relative to other multimedia object start times; and

(ii) a label for the multimedia object's end time. relative to other multimedia object end times.

Further, both Graf and Zarros also fail to teach or suggest these features. For example, on page 4 of the October 27, 2003 Office Action, the Examiner admits that the combination of Kim and Graf do not explicitly teach

> "resolving the durations of multimedia objects using information based on actual multimedia object durations and actual delay arrival time of information of multimedia objects to be played."

Appellants certainly agree.

However, the Examiner also then contradicts this statement by asserting that Graf does show the above feature. In this contradictory statement, the Examiner directed Appellants' attention to col. 4, lines 15-33 and col. 5, lines 49-56. However, Appellants maintain that Graf does not teach using actual multimedia object durations (i.e., played durations). Instead, Graf teaches using preferred durations (i.e., desired or ideal durations prior to actual playback).

More specifically, Graf is directed to a system for compensating for transmission jitter and burstiness in packets when transmitting a file of data such as video over networks. At col. 4, lines 15-33 and col. 5, lines 49-56, Graf is describing that an additional time delay is being pre-calculated off-line (i.e., pre-calculated before delivery/transmission of any data) (col. 4, line 19-23) and the pre-calculated delay parameter is appended to each of the multimedia files in an attempt to compensate for any possible delays/jitter based on a model of the underlying network. This attempts to accommodate a particular network's bandwidth and possible situational delays such as, for example, jitter. The pre-calculation is performed using a presentation file to be served, i.e., before delivery of the file (col. 4, 39-43). Since this file has not yet been sent, when the pre-calculation is performed, the file has not yet experienced any delays, and therefore cannot be representative of an actual duration. This is the exact reason that

Graf can only use a preferred duration (i.e., a duration resulting from being created). That is, the file necessarily has only a preferred duration since it has not been transmitted yet and encountered delays form the transmission.

As is calculated by the present invention, a file only achieves an actual duration, once it has been transmitted, received, and played by a player. Only then can the actual duration become a known duration, as taught by the invention. Actual duration includes the result from any real delays in transmission and processing before and during playing by the player. In Graf, no actual durations are determined, since there is no contemplation of durations after transmission and playing of the file. Graf is based on a model and pre-determined calculations.

Further, Graf does not teach or suggest determining an actual duration of a multimedia object since an actual duration is not known until a player has been supplied an object and played. In Graf, there is no indication at all that an actual duration is ever known (e.g., playback has ever occurred by a player and a duration becoming known). In Graf, the file is scanned by a server, not a player (col. 4, line 39-43) and the modeling used by Graf is an estimation process before any actual transmission of data ever occurs. By logic, this can never be an actual duration as taught by the invention.

Also, Graf is concerned with only one file or object at a time in the pre-calculation and, in fact, never contemplates resolving durations between objects. The invention, on the other hand, requires multiple objects to be played in relation to one another. It is the use of the multiple objects that temporal and progressive time stamping can occur, a great advantage over the Graf model. Graf is not concerned with relational

timing of objects in a presentation. There is simply no suggestion or teaching in Graf that the actual delayed arrival time is an absolute difference between a known (e.g., played) duration and the preferred duration of multimedia objects (e.g., as supplied in the labels).

Additionally, the invention is defining the actual delayed arrival time in absolute terms based on a played object (i.e., a known duration). Nowhere does Graf deal with relationships of multiple objects and does not teach or suggest an actual delayed arrival time as being an absolute difference between a known duration (i.e., played) and the preferred duration of the multimedia objects (as supplied by labels). Additionally, the invention teaches at least two durations, actual and preferred, and an actual delayed arrival time is an absolute difference between a known duration and the preferred duration of the multimedia objects. Graf does not teach or suggest such a calculation.

The Examiner further argues that Zarros explicitly teaches durations of multimedia objects using information based on actual multimedia object durations and actual delay arrival time of information to be played. In this argument, the Examiner directs Appellants' attention to to col. 5, lines 19-46 of Zarros. Appellants again respectfully disagree. Zarros simply does not teach durations of multimedia objects using information based on actual multimedia object durations and actual delay arrival time of information to be played.

Rather Zarros teaches compensation of packet jitter over a network. But, first, packets are not multimedia objects, as one of ordinary skill in the art would recognize. Typically, packets simply bear/transport pieces of objects (among other data), but are,

themselves, not multimedia objects. Further, packets are typically quite unaware of the content that they bear such as, for example, multimedia objects.

In any event, Zarros does not teach calculating relational durations of multimedia objects at all. Instead, Zarros deals with jitter of packets by using an estimation method (see at least, col. 2, lines 44-46, col. 5, lines 53-56, col. 6, lines 42-55, col. 7, 1-4, col. 7, lines 61-63). Since the compensation of jitter is based on estimations on a per packet basis, then there logically cannot be any actual and known duration of multimedia objects as taught by the invention. Zarros teaches a mechanism at a receiver to estimate playback time of packets using the concept of reference times or average arrival times which is achieved by modeling traffic of the packets as noncontinuous periodic. This means, even if packets are generated aperiodic, the sender will insert "empty data" in the packet to make the generation times of packets periodic. The receiver may compensate for jitter in packet reception by using the estimated reference time from a given source to compensate for any packet delays relative to the estimated reference time.

Appellants also note that the Examiner is attempting to assert that calculating and adjustment for packet jitter based on frequency mismatches between clocks in a sender and a receiver using an average delay in packet arrival (col.5, lines 19-27) is the same as resolving the duration of multimedia objects using information based on actual multimedia object durations (i.e., played) and actual delayed arrival time of information of multimedia objects to be played, the actual delayed arrival time delay arrival time being an absolute difference between a known duration (i.e., played) and the preferred duration (i.e., ideal duration) of the multimedia objects. Nowhere are these concepts

present in Zarros. Further these concepts are not present in any of the references, either singly or in combination.

In conclusion, the combination of references does not at least teach or even remotely suggest at least:

(i) actual and known durations of multimedia objects,

(ii) determining actual delayed arrival time as an absolute difference between a known duration (i.e., played) and the preferred duration of multimedia objects, and

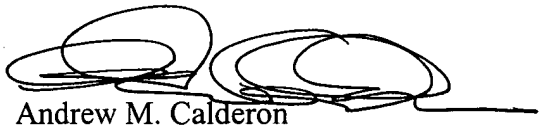
(iii) resolving temporal relations between multimedia objects based on (i) and (ii).

Appellants thus submit that a *prima facie* case of obviousness has not been established, either singly or in combination, with the references of record.

CONCLUSION

In summary, the combination of Kim Graf and Zarros do not teach or suggest the features of the claimed invention. Therefore, the references do not provide evidence that would support a conclusion of obviousness under 35 U.S.C. §103(a). Appellants thus respectfully submit that the rejections of claims 1, 2 and 5-7 are in error and reversal thereof is respectfully requested.

Respectfully submitted,



Andrew M. Calderon
Reg. No. 38,093

Charles J. Gross
Reg. No. 52,972

McGuireWoods, LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102-4215
Tel: 703-712-5341
Fax: 703-712-5194

APPENDIX "A"

CLAIMS

A copy of all entered claims and a status of the claims is provided below.

1. A method of progressive time stamp resolution in a multimedia presentation comprising the steps of:

supplying a player of a multimedia presentation with information comprising two labels, one for a multimedia object's start time and one for the multimedia object's end time relative to other multimedia object start and stop times, and three durations, a minimum duration, a maximum duration and a preferred duration for each multimedia object prior to starting playback of the multimedia object; and

resolving the duration of multimedia objects using said information based on actual multimedia object durations and actual delayed arrival time of information of multimedia objects to be played, the actual delayed arrival time being an absolute difference between a known duration and the preferred duration of the multimedia objects.

2. The method of progressive time stamp resolution in a multimedia presentation recited in claim 1 wherein the step of resolving comprises the steps of:

calculating minimum and maximum end times for over all multimedia objects;

calculating actual end times that are shared by all multimedia objects; and

recalculating a preferred duration of each multimedia object.

3. A method of progressive time stamp resolution in a multimedia presentation, comprising the steps of:

supplying a player of a multimedia presentation with information comprising two labels, one for a multimedia object's start time and one for the multimedia object's end time relative to other multimedia object start and stop times, and three durations, a maximum duration and a preferred duration for each multimedia object prior to playback of the multimedia object; and

resolving the durations of the multimedia objects using said information based on actual multimedia object durations and arrival of information of multimedia objects to be played, wherein the step of resolving comprises the steps of:

collecting all the dependency relations for a label Px, by taking all objects *n* that have Px as the label for their end time:

$t_n + \text{minimum}(n) \leq t_x \leq t_n + \text{maximum}(n) \quad n = 1,\ldots,N$

where t_n is the start time of object *n*, and *N* is the number of objects;

using the *N* relations to calculate the tightest bounds on t_x:

$\min\{t_x\} \leq \{t_x\} \leq \max\{t_x\}$

with

$\min\{t_x\} = \max\{t_x + \text{minimum}(n)\} \quad n = 1,\ldots,N$

$\max\{t_x\} = \min\{t_x + \text{maximum}(n)\} \quad n = 1,\ldots,N;$

recalculating bounds on the duration of each object *n*, by using:

$\text{duration}(n) = t_x - t_n$

to get

$\min\{t_x\} - t_n \leq \text{duration}(n) \leq \max\{t_n\} - t_n \quad n=1,\ldots N;$ and

recalculating the preferred duration of each object *n* according to the process:

if $(\text{preferred}(n) < \min\{t_x\} - t_n)$ then

$\text{preferred}(n) = \min\{t_x\} - t_n$

else if $(\text{preferred}(n) > \max\{t_x\} - t_n)$ then

$\text{preferred}(n) = \max\{t_x\} - t_n$

end if.

4. The method of progressive time stamp resolution in a multimedia presentation recited in claim 3 wherein the step of resolving further comprises the steps of:

using as the general error criterion for resolving the duration of each multimedia object:

$$E = \sum_{n=1}^{N} \{\text{duration}(n) - \text{preferred}(n)\}^2$$

or, substituting duration(n) = t_x - t_n:

$$E = \sum_{n=1}^{N} \{t_x - t_n - \text{preferred}(n)\}^2$$

and taking the derivative of E with respect to t_x, and setting this to 0 to obtain the optimal solution for the absolute time t_x of label Px as:

$$t_x = \frac{1}{N} \sum_{n=1}^{N} \{t_n + \text{preferred}(n)\}; \text{ and}$$

calculating the corresponding duration of multimedia object n as:

duration(n) = t_x - t_n.

5. The method according to claim 1, further comprising the step of playing said each multimedia object.

6. The method according to claim 1, wherein said actual multimedia object durations are larger than a preferred duration.

7. The method according to claim 1, wherein said actual multimedia object durations are smaller than a preferred duration.